

REMARKS

The foregoing amendment amends claims 1-3, 5 and 11-16 and cancels claims 7-10 and 19-24. Pending in the application are claims 1-6 and 11-18, of which claims 1 and 11 are independent.

Interview and Claim Amendments

Applicants thank the Examiner for the courtesy of a telephone interview on September 6, 2006. Based on the discussion with the Examiner during the interview, Applicants amend claims 1 and 11 to clarify that the step is located *between* a contact surface with the inner seal member (claim 1)/backing member (claim 11) and a contact surface with the outer seal member. Dependent claims are amended to address minor informalities. Support for the claim amendment can be found in the figures and corresponding descriptions in the specification. No new matter is added. The following comments address all stated grounds for rejection and place the presently pending claims, as identified above, in condition for allowance.

Rejection of Claims 1-4, 6-9 and 11-24 under 35 U.S.C. §102

Claims 1-4, 6-9 and 11-24 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,232,792 (“Reznikov”). Applicants respectfully traverse the rejection for the following reasons.

Independent claims 1 and 11 are directed to a fuel cell including a pair of separators sandwiching a membrane electrode assembly. The membrane electrode assembly includes a pair of electrodes provided on both sides of a solid polymer electrolyte membrane. The fuel cell includes an outer seal member sandwiched by a pair of separators at a position surrounding an outer periphery of the membrane electrode assembly. The fuel cell also includes an inner seal member sandwiched by one of the pair of separators and an outer periphery of the electrolyte membrane.

In claim 1, a step is formed between a first plane portion in contact with said inner seal member and a second plane portion in contact with said outer seal member on one of the pair of separators. In claim 11, the fuel cell further includes a backing member in opposition to the inner seal member and interposing the electrolyte membrane, and a step is formed between the contact surface with the backing member and the contact surface with the outer seal member on the other separator. Claims 2-4 and 6 depend from claim 1. Claims 12-18 depend from claim 11. Claims 7-9 and 19-24 are canceled in the foregoing claim amendments.

Applicants submit that the Reznikov reference does not disclose that *a step is formed between a first plane portion in contact with an inner seal member and a second plane portion in contact with an outer seal member on one of the separators*, as recited in independent claim 1, and that *a step is formed between a contact surface with a backing member and a contact surface with an outer seal member on the other separator*, as recited in claim 11.

Reznikov discloses a high temperature fuel cell, such as a molten carbonate fuel cell. In the Office Action, the Examiner notes that the Reznikov reference discloses a step in FIG. 1 between reference numerals 23 and 25. The step disclosed in the Reznikov reference is a weld. See Reznikov, column 7, lines 14-17. In Reznikov, the step is a jointing surface formed by welding a plurality of metal plates.

In comparison, an embodiment of the invention recited in claim 1 forms a step between the first plane portion (22) and the second plane portion (23) of the plane portion (17) by press molding a metal plate. See the pending application, Fig. 4. Since the step is formed between the first plane portion (22) and the second plane portion (23), the embodiment can reduce the height difference between the space to be sealed by the outer seal member (5) and the space to be sealed by the inner seal member (6). In particular, when the step is formed to have the same height as the combined thickness of the anode electrode (7) and the electrolyte membrane (8), the height of the space to be sealed by the outer seal member (5) can be the same as the height of the space to be sealed by the inner seal member (6). Consequently, the height of the outer seal member (5) and the inner seal member (6) can be the minimum height for sealing the space, which results in less material and cost reduction. See the pending application, page 16, lines

8-13, and page 20, lines 4-12. Reznikov reference does not disclose the step recited in claims 1 and 11, and hence cannot provide the advantages of the present invention.

Additionally, Applicants submit that the Reznikov reference does not disclose an *outer seal member sandwiched by a pair of separators at a position surrounding an outer periphery of the membrane electrode assembly, and an inner seal member sandwiched by one of the pair of separators and an outer periphery of said electrolyte membrane*, as recited in claims 1 and 11.

The Reznikov reference discloses electrolyte seal structures (21, 31) in FIG. 1. The electrolyte seal structures (21, 31) of Reznikov are regions of the separator (20) specified to form a wet-seal, which is inherent in a molten carbonate fuel cell. The wet-seal is a gas sealing structure for the molten carbonate fuel cell in which a porous electrolyte matrix (11) is used.

In comparison, the inner seal member (6) and the outer seal member (5) are provided with the solid polymer electrolyte fuel cell in an embodiment of the invention recited in claims 1 and 11. The seal members provide air-tight sealing or liquid-tight sealing of the supply ports (11, 12 and 13) and exhaust ports (14, 15, and 16) of the fuel gas, oxidant gas, and cooling medium and the corrugated portion (10). In the embodiment, the inner seal member (6) and the outer seal member (5) are formed by materials having suitable elasticity and separate from the separators (3, 4). The electrolyte seal structures (21, 31) of the Reznikov reference are integrated into the separator by welds and provided for the separator to resist corrosive actions of the molten carbonate. The electrolyte seal structures (21, 31) disclosed in Reznikov are different from the inner and outer seal member recited in claims 1 and 11. In particular, the electrolyte seal structures (21, 31) disclosed in Reznikov does not surround an outer periphery of the electrolyte (11).

Furthermore, Reznikov discloses a high temperature fuel cell, such as a molten carbonate fuel cell. In comparison, the fuel cell of claims 1 and 11 relates to a solid polymer electrolyte fuel cell which operates at a low operating temperature. The structure of a solid polymer electrolyte fuel cell is completely different from the structure of the molten carbonate fuel cell.

In light of the foregoing amendments and arguments, Applicants submit that Reznikov does not disclose each and every element of claims 1 and 11. Applicants therefore request that the Examiner reconsider and withdraw the rejection of claims 1-4, 6-9 and 11-24 under 35 U.S.C. §102(b), and pass the claims to allowance.

Rejection of Claims 5, 10, 12 and 19 under 35 U.S.C. §103

Claims 5, 10, 12 and 19 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Number 5,232,792 (“Reznikov”). Applicants respectfully traverse the rejection for the following reasons.

Claims 5 and 12 depend from claims 1 and 11 and add separate and patentable limitations to claims 1 and 11, respectively. Claims 10 and 19 are canceled in the foregoing amendment. Applicants submit that the Reznikov reference does not teach that *a step is formed between a first plane portion in contact with an inner seal member and a second plane portion in contact with an outer seal member on one of the separators*, as recited in independent claim 1, and that *a step is formed between a contact surface with a backing member and a contact surface with an outer seal member on the other separator*, as recited in claim 11. Claims 5 and 12, which depend from claims 1 and 11, respectively, are not rendered obvious over the cited reference. Applicants therefore request that the Examiner reconsider and withdraw the rejection of claims 5, 10, 12 and 19 under 35 U.S.C. §103(a), and pass the claims to allowance.

Double Patenting Rejection

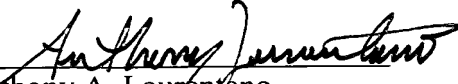
Claims 1-11, 13 and 14 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent Number 6,815,115. Applicants submit a terminal disclaimer in compliance with 37 C.F.R. §1.321 to overcome the rejection.

Conclusion

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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